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TITLE: FIXING DEVICE FOR IMAGE RECORDER

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ABSTRACT:

PROBLEM TO BE SOLVED: To provide a fixing device for an image recorder where transfer material is held and transported by press-contact elastic rollers, the fixing device having a **separation pawl for preventing a transfer material** from being wound around the elastic roller, and preventing the damage of the elastic roller by restraining the biting of the separation pawl at the elastic roller so that the abutting **end of the separation** pawl may not bite and damage the elastic roller even when set pressure or more is applied to the **separation pawl** **because paper** jamming occurs in a transporting downstream direction.

SOLUTION: In the fixing device for the image recorder equipped with elastic rotating bodies 6 and 7 rotating in a press-contact state each other and pinching and transporting transfer material 15 at a press-contact part, and the separation pawl 1 abutting on the outer circumferential surfaces of the rotating bodies 6 and 7 and preventing the transfer material 15 pinched and transported from being wound round the rotating bodies 6 and 7, the pawl 1 has a pawl part 1a abutting on the surfaces of the rotating bodies 6 and 7, and auxiliary abutting parts 2 and 2' abutting on the rotating bodies 6 and 7 at a position separated from the rotating bodies 6 and 7 on a downstream side from the pawl part 1a and provided in the width directions of the rotating bodies 6 and 7.

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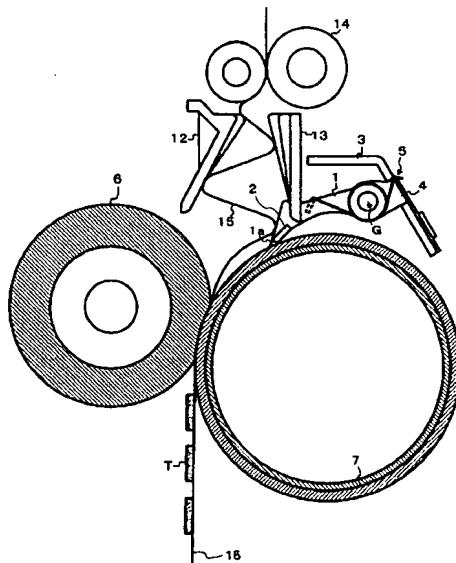
(54) 【発明の名称】 画像記録装置の定着装置

## (57) 【要約】

【課題】 圧接する弾性ローラにより転写材を挟持搬送し、かつ弾性ローラに転写材が巻き付くことを防止するための分離爪を備えて、搬送下流方向にてジャム等による用紙詰まりにより分離爪に設定以上の圧力が加わった場合にも分離爪当接端が弾性ローラに食い込み傷付けないように、分離爪の弾性ローラへの食い込みを規制するようにし、傷付きを防止する画像記録装置の定着装置を提供する。

【解決手段】 互いに圧接状態で回転し、圧接部にて転写材15を挟圧搬送する弾性回転体6、7と、この弾性回転体6、7の外周面に当接し、挟圧搬送する前記転写材15の前記弾性回転体6、7への巻き付きを防止するための分離爪1とを備えた画像記録装置の定着装置において、前記分離爪1が前記弾性回転体6、7の表面に当接する爪部1aと、この爪部1aよりも下流側で前記弾性回転体6、7から離れる位置で、前記弾性回転体6、7に当接し、前記弾性回転体6、7の幅方向に沿って設けられた補助当接部2、2'とを有する。

【選択図】 図1



## 【特許請求の範囲】

## 【請求項 1】

互いに圧接状態で回転し、圧接部にて転写材を狭圧搬送する弾性回転体と、この弾性回転体の外周面に当接し、狭圧搬送する前記転写材の前記弾性回転体への巻き付きを防止するための分離爪とを備えた画像記録装置の定着装置において、前記分離爪が前記弾性回転体の表面に当接する爪部と、この爪部よりも下流側で前記弾性回転体から離れる位置で前記弾性回転体に当接し前記弾性回転体の幅方向に沿って設けられた補助当接部と、を有することを特徴とする画像記録装置の定着装置。

## 【請求項 2】

前記補助当接部が前記弾性回転体の回転方向上流側に向かって、前記弾性回転体の表面と鋭角をなす補助当接面を有することを特徴とする画像記録装置の定着装置。 10

## 【請求項 3】

前記補助当接部が前記弾性回転体の幅方向で主当接部の両端に配置されることを特徴とする請求項 1 または 2 記載の画像記録装置の定着装置。

## 【請求項 4】

前記爪部が前記弾性回転体の回転方向上流側に向かって、前記弾性回転体の表面と鈍角をなして転写材を案内する転写材案内面を有し、前記補助当接部が前記転写材案内面よりも前記弾性回転体の回転方向下流側に配置されることを特徴とする請求項 1 または 2 記載の画像記録装置の定着装置。

## 【発明の詳細な説明】 20

## 【技術分野】

## 【0001】

本発明は、圧接する弾性ローラにより転写材を挟持搬送し、かつ弾性ローラに転写材が巻き付くことを防止するための分離爪を備えた画像記録装置の定着装置に関するものである。

## 【背景技術】

## 【0002】

互いに圧接状態で回転し、圧接部にて転写材を挟持搬送する弾性ローラと、この弾性ローラの外周面に当接し、挟持搬送する転写材の弾性ローラへの巻き付きを防止する技術は従来から知られている（例えば、特許文献 1、2 参照）。 30

図 7 は圧接する弾性ローラにより転写材を挟持搬送する例として複写機などの画像記録装置における従来の定着装置を説明する部分断面図である。熱源を内蔵した定着ローラ 6 は発泡シリコンから作られ、表層のみ固いシリコンゴムにより平滑性と離型性を確保している。

加圧ローラ 7 も鋼管の表層を固いシリコンゴムで覆うことにより平滑性と離型性を定着ローラ 6 と同等に保つことによって両面印字にも対応するようになっている。また、さらに離型性を向上するため図示しないオイル塗布手段により、微量のシリコンオイルを表層に塗布している。

分離爪 8 はステー 9 に固定されるブラケット 10 を介し回転支点 H を中心に回動自在に取り付けられており、さらにばね 11 により加圧ローラ 7 方向に加圧され、分離爪 8 の先端部が加圧ローラ 7 の表層に当接している。 40

未定着トナー T を転写された転写材 15 は、定着ローラ 6 と加圧ローラ 7 のニップ部において加熱、加圧されトナーを定着された後、ローラの曲率と転写材の剛性によりローラから分離、出口ガイド板 12 および 13 にガイドされ出口ローラ対 14 により機外へと搬出される。

通常はローラの曲率により転写材 15 は加圧ローラ 7 から分離搬送されるが、吸湿などによる転写材 15 の状態やトナーの付着量の影響により曲率による分離ができない場合は転写材 15 の先端が分離爪 8 により機械的に引き剥がされ搬送される。

【特許文献 1】特開 2000-29346 公報

【特許文献 2】特開平 5-307336 号公報 50

## 【発明の開示】

## 【発明が解決しようとする課題】

## 【0003】

図8は図7による定着装置においてジャムが発生してジャム紙が定着出口部に詰まった場合を説明する部分断面図である。定着ローラ6と加圧ローラ7対から搬送された後、出口部にて転写材が滞りジャムとなると、出口ガイド板12および13の間でアコーディオン状に転写材15が詰まり、分離爪8を矢印J向に押し付けることになる。

この状態でジャム紙を排出するために加圧ローラ7を矢印K方向に回転させると過剰に当接せられた分離爪8の先端が加圧ローラ7の外周弾性面に食い込み傷を付ける。

前述のような不具合を軽減するため分離爪の当接幅を大きくし、当接面の面圧を小さくする対策が取られる場合もあるが、分離爪の幅を大きくした比率で食い込み量、食い込み力が軽減されるのみであり、逆に分離爪によるスジ跡などが幅を広げた分だけ顕著になる不具合があった。

そこで本発明の目的は、上記の問題点を解決するために、圧接する弾性ローラにより転写材を挟持搬送し、かつ弾性ローラに転写材が巻き付くことを防止するための分離爪を備えて、搬送下流方向にてジャム等による転写材詰まりにより分離爪に設定以上の圧力が加わった場合にも分離爪当接端が弾性ローラに食い込み傷付けないように、分離爪の弾性ローラへの食い込みを規制するようにし、傷付きを防止する画像記録装置の定着装置を提供することにある。

## 【課題を解決するための手段】

## 【0004】

前記の課題を解決するために、請求項1記載の発明では、互いに圧接状態で回転し、圧接部にて転写材を挟持搬送する弾性回転体と、この弾性回転体の外周面に当接し、挟持搬送する前記転写材の前記弾性回転体への巻き付きを防止するための分離爪とを備えた画像記録装置の定着装置において、前記分離爪が前記弾性回転体の表面に当接する爪部と、この爪部よりも下流側で前記弾性回転体から離れる位置で、前記弾性回転体に当接し、前記弾性回転体の幅方向に沿って設けられた補助当接部とを有する画像記録装置の定着装置を最も主要な特徴とする。

請求項2記載の発明では、前記補助当接部が前記弾性回転体の回転方向上流側に向かって、前記弾性回転体の表面と鋭角をなす補助当接面を有する画像記録装置の定着装置を主要な特徴とする。

請求項3記載の発明では、前記補助当接部が前記弾性回転体の幅方向で主当接部の両端に配置される請求項1または2記載の画像記録装置の定着装置を主要な特徴とする。

請求項4記載の発明では、前記爪部が前記弾性回転体の回転方向上流側に向かって、前記弾性回転体の表面と鈍角をなして転写材を案内する転写材案内面を有し、前記補助当接部が前記転写材案内面よりも前記弾性回転体の回転方向下流側に配置される請求項1または2記載の画像記録装置の定着装置を主要な特徴とする。

## 【発明の効果】

## 【0005】

請求項1によれば、ジャム発生時もしくは誤操作により転写材を詰まらせたさいにも分離爪による弾性ローラへの傷付けを防止でき、修理費用、サービスコストを抑えた画像記録装置の定着装置を提供できる。

請求項2によれば、迎角 $\theta$ の面を構成することにより分離爪の食い込みに対する抵抗力をより大きくすることができ、より確実な効果を期待できる。

請求項3によれば、通常当接状態では分離爪の先端のみの当接となるため分離爪によるスジ画像など異常画像を発生することなく、弾性ローラへの傷発生のない画像記録装置の定着装置を提供できる。

請求項4によれば、トナー付着量や転写材の吸湿により曲率分離が不十分となり、分離爪により機械的に引き剥がすような状況においても、ジャム等の発生を悪化させることなく分離爪による弾性ローラへの傷発生のない画像記録装置の定着装置を提供できる。

【発明を実施するための最良の形態】

【0006】

以下、図面により本発明の実施の形態を詳細に説明する。図1は圧接する弾性ローラにより記録材（転写材）を挟持搬送する例として複写機などの画像形成装置における定着装置を示す概略断面図である。

図2は図1の定着装置の部分拡大図である。図3は図1の定着装置の分離爪を示す斜視図である。

なお、本実施形態の説明に於いて、図7、図8に示した構成例と同一部分には同一符号を付し、重複した構成、動作の説明は省略する。

図1ないし図3において、分離爪1はステー3に固定されるブラケット4を介し回転支点Gを中心に回転自在に取り付けられている。 10

さらにばね5により加圧ローラ（弾性回転体）7方向に加圧され、分離爪1の先端（爪部）1aが加圧ローラ7の表層に当接している。熱源を内蔵した定着ローラ（弾性回転体）6が発泡シリコンから作られ、表層のみ固いシリコンゴムにより平滑性と離型性を確保している。

分離爪1の先端1aの両側面には夫々搬送方向と直交する方向に突起（補助当接部）2および2'が設けられており、分離爪1の先端1aが加圧ローラ7と当接しているのに対し、突起2および2'の先端部には空隙Aが設けられている。

【0007】

突起（補助当接部）2および2'を設けることによって、分離爪1の先端と共に突起も加圧ローラ7に当接するため、分離爪1の先端（爪部）1aの沈み込みによる加圧ローラ（弾性回転体）7の傷が深くなることが防止される。 20

突起（補助当接部）2および2'は加圧ローラ（弾性回転体）7には常時当接しないため、加圧ローラ（弾性回転体）7の幅方向に傷が広がるのを防止することができる。

加圧ローラ（弾性回転体）7の表面と鋭角（ $\theta$ ）をなす補助当接面を有し、これによって加圧ローラ（弾性回転体）7の回転力を、分離爪1を跳ね上げる力に変換することができる。

上述のごとく、加圧ローラ（弾性回転体）7の幅方向に傷が広がるのを防止する目的であるならば、補助当接面2aは加圧ローラ（弾性回転体）7の表面と垂直（ $\theta = 90$ ）または平行（ $\theta = 0$ ）でも構わない。 30

ジャムが発生した場合等で出口部にアコーディオン状に転写材15が詰まった場合は、加圧ローラ7当接方向である矢印B方向に力が加わり、かつ加圧ローラ7は矢印F方向に回転しているため、鋭利な分離爪1の先端1aは加圧ローラ7の外周面のシリコンゴム層に食い込む挙動となる。

これに対して突起2および2'は、加圧ローラ7が矢印F方向に回転することによって、突起2および2'が空隙Aのために矢印B方向への移動に対する抵抗となり分離爪1の先端が加圧ローラ7のシリコンゴム層に食い込むのを防止する。

【0008】

図4は加圧ローラと分離爪の先端当接部法線方向に対して迎角 $\theta$ を設けた面を説明する図1の定着装置の部分拡大図である。図5は定着出口部の転写材の詰まりを説明する図1の定着装置の部分拡大図である。図6は図5の分離爪を示す概略斜視図である。 40

分離爪1の突起2および2'の先端には、加圧ローラ7と分離爪1先端当接部法線方向に対し迎角 $\theta$ を付けた面2aを設けている。また分離爪1が外力を受けない場合の通常当接時には、突起部2および2'は加圧ローラ7の外周面との間に微小ギャップ $\delta$ （図4）を設けるようになっている。

分離爪1が加圧ローラ（弾性回転体）7の表面に当接する先端（爪部）1aと、弾性回転体7の回転方向で先端（爪部）1aよりも下流側で弾性回転体7に当接し、弾性回転体7の幅方向に沿って備えた突起（補助当接部材）2および2'とを有し、この補助当接部材2および2'が弾性回転体7の回転方向上流側に向かって、弾性回転体7の表面と鋭角（ $\theta$ ）をなす補助当接面を有する。 50

## 【0009】

図5において定着出口部に転写材15が詰まることにより分離爪1に矢印B方向（圧接方向）への力を受けると、分離爪1の先端が加圧ローラ7の外周面シリコンゴム層に食い込むようになる。突起部2および2'と加圧ローラ7の外周面との微小ギャップ $\delta$ 分だけ沈み込むと迎角 $\theta$ を設けた面が加圧ローラ7の外周面と当接する。

加圧ローラ7は矢印F方向に回転しているため突起2および2'方向には矢印D方向の浮力が働き分離爪1の先端がそれ以上沈み込むのを防止するため、分離爪1先端による傷を発生しない。

なお、迎角 $\theta$ は $0^{\circ} \sim 90^{\circ}$ の範囲で効果を発揮するけれども、実験の結果からは30°前後が効果的であった。

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通常は加圧ローラの曲率により転写材15は加圧ローラ7から分離搬送されるが、吸湿などによる転写材15の状態やトナーの付着量の影響により曲率による分離ができない場合は転写材15の先端が分離爪1により機械的に引き剥がされ搬送される。

突起（補助当接部）2および2'が、加圧ローラ（弾性回転体）7の幅方向で分離爪（主当接部）1の両端に配置される。爪部1aが加圧ローラ（弾性回転体）7の回転方向上流側に向かって、弾性回転体7の表面と鈍角をなして転写材を案内する転写材案内面Eを有し、前記補助当接部2および2'が前記転写材案内面Eよりも前記弾性回転体7の回転方向下流側に配置される。

## 【0010】

このような構成では転写材15の先端が分離爪1の上面Eに沿って搬送される。このため仮に突起2および2'がE面より突出していると、転写材15の先端が突起2および2'に引っ掛かる恐れがある。しかし突起2および2'をE面より引っ込ませている（図4、λ）ため転写材15を滞らせることなく搬送できる。

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補助当接部（突起）2および2'は、好ましくは、加圧ローラ（弾性回転体）7の幅方向で主当接部（分離爪）1の両端に配置される。しかし、主当接部（分離爪）1が加圧ローラ（弾性回転体）7の幅方向で補助当接部（突起）2および2'の両端に配置されても、また、主当接部（分離爪）1が加圧ローラ（弾性回転体）7の幅方向で交互に配置されることも可能である。

## 【産業上の利用可能性】

## 【0011】

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本発明の利用可能性として、他の実施形態の分離爪を備えた画像記録装置の定着装置が挙げられる。

## 【図面の簡単な説明】

## 【0012】

【図1】圧接する弾性ローラにより記録材（転写材）を挟持搬送する例として複写機などの画像形成装置における定着装置を示す概略断面図。

【図2】図1の定着装置の部分拡大図。

【図3】図1の定着装置の分離爪を示す斜視図。

【図4】加圧ローラと分離爪の先端当接部法線方向に対して迎角 $\theta$ を設けた面を説明する図1の定着装置の部分拡大図。

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【図5】定着出口部の転写材の詰まりを説明する図1の定着装置の部分拡大図。

【図6】図5の分離爪を示す概略斜視図。

【図7】圧接する弾性ローラにより転写材を挟持搬送する例として複写機などの画像記録装置における従来の定着装置を説明する部分断面図。

【図8】図7による定着装置においてジャムが発生してジャム紙が定着出口部に詰まった場合を説明する部分断面図。

## 【符号の説明】

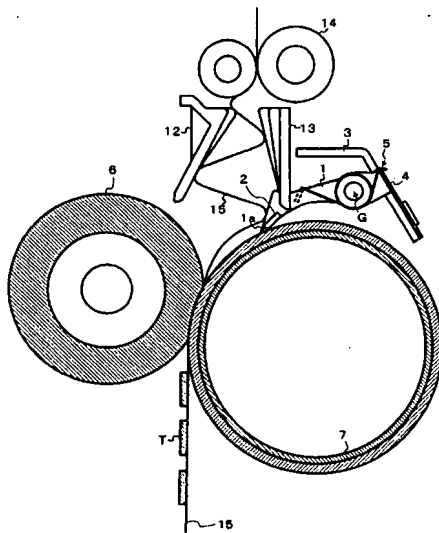
## 【0013】

- 1 分離爪（主当接部）
- 1 a 爪部（分離爪の先端）

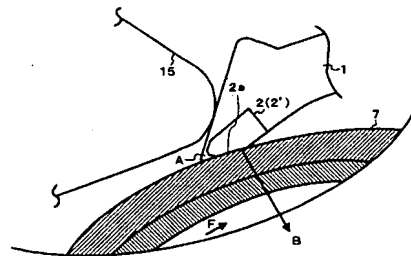
50

- 2 突起（補助当接部）
- 2 a 補助当接面
- 6 定着ローラ（弾性回転体）
- 7 弾性回転体（加圧ローラ）
- E 転写材案内面

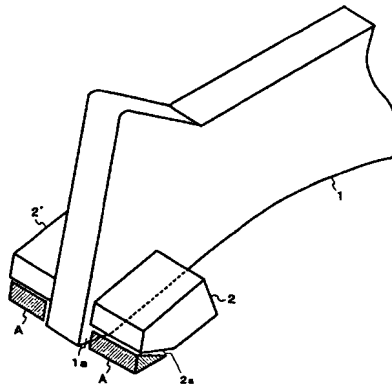
【図 1】



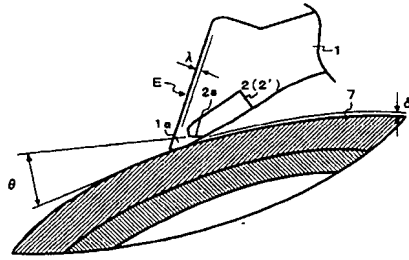
【図 2】



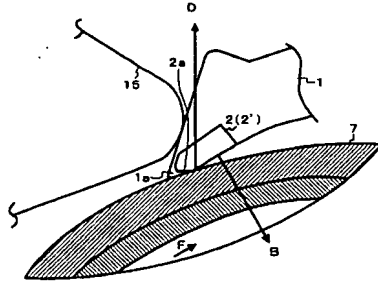
【図 3】



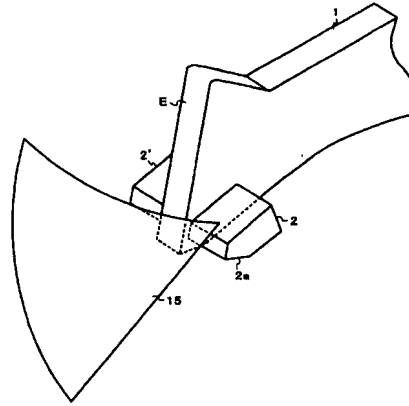
【図 4】



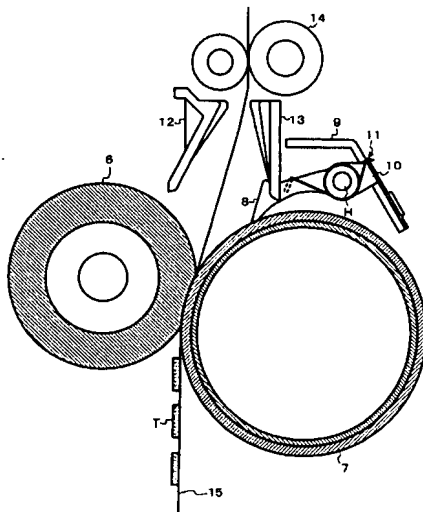
【図 5】



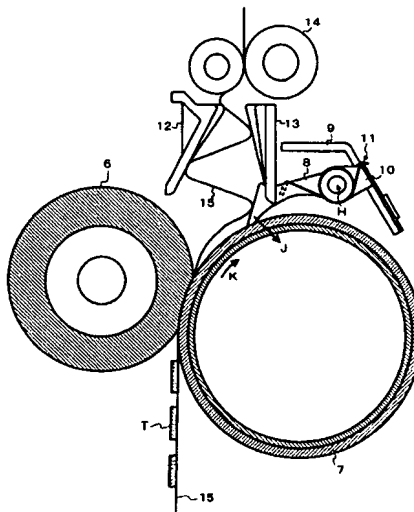
【図 6】



【図 7】



【図 8】





フロントページの続き

【要約の続き】

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CLAIMS

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[Claim(s)]

[Claim 1]

The elastic body of revolution which rotates in the state of a pressure welding mutually, and carries out compression conveyance of the imprint material in the pressure-welding section, In the anchorage device of image recording equipment equipped with the separation pawl for contacting the peripheral face of this elastic body of revolution, and preventing coiling round to said elastic body of revolution of said imprint material which carries out compression conveyance The anchorage device of the image recording equipment characterized by having the claw part to which said separation pawl contacts the front face of said elastic body of revolution, and the auxiliary contact section prepared along the cross direction of said elastic body of revolution in the location which separates from said elastic body of revolution by the downstream in contact with said elastic body of revolution rather than this claw part.

[Claim 2]

The anchorage device of the image recording equipment characterized by said auxiliary contact section having the auxiliary contact side which makes the front face and acute angle of said elastic body of revolution toward the improvement style side in the method of rotation of said elastic body of revolution.

[Claim 3]

The anchorage device of the image recording equipment according to claim 1 or 2 characterized by arranging said auxiliary contact section to the both ends of the main contact section in the cross direction of said elastic body of revolution.

[Claim 4]

The anchorage device of the image recording equipment according to claim 1 or 2 characterized by having the imprint material slideway to which said claw part makes the front face and obtuse angle of said elastic body of revolution, and shows imprint material toward the improvement style side in the method of rotation of said elastic body of revolution, and arranging said auxiliary contact section rather than said imprint material slideway at the hand-of-cut downstream of said elastic body of revolution.

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[Translation done.]

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[Field of the Invention]

[0001]

This invention relates to the anchorage device of image recording equipment equipped with the separation pawl for preventing that carry out pinching conveyance of the imprint material with the elastic roller which carries out a pressure welding, and imprint material coils around an elastic roller.

[Background of the Invention]

[0002]

It rotates in the state of a pressure welding mutually, and the technique of preventing coiling round on the elastic roller of the imprint material which contacts the peripheral face of the elastic roller which carries out pinching conveyance, and this elastic roller, and carries out pinching conveyance of the imprint material in the pressure-welding section is known from the former (for example, the patent reference 1, 2 reference).

Drawing 7 is a fragmentary sectional view which considers as the example which carries out pinching conveyance of the imprint material with the elastic roller which carries out a pressure welding, and explains the conventional anchorage device in image recording equipments, such as a copying machine. The fixing roller 6 which contained the heat source was made from foaming silicon, and only the surface has secured smooth nature and a mold-release characteristic by hard silicone rubber.

When the pressurization roller 7 also covers the surface of a steel pipe by hard silicone rubber, it corresponds also to double-sided printing by keeping smooth nature and a mold-release characteristic equivalent to a fixing roller 6. Furthermore, the silicone oil of a minute amount is applied to a surface with the oil spreading means which is not illustrated in order to improve a mold-release characteristic. The separation pawl 8 is attached free [ rotation ] focusing on the rotation supporting point H through the bracket 10 fixed to stay 9, it was further pressurized in the pressurization roller 7 direction with the spring 11, and the point of the separation pawl 8 is in contact with the surface of the pressurization roller 7.

after the imprint material 15 which had the non-established toner T imprinted is heated and pressurized [ set and ] by the nip section of a fixing roller 6 and the pressurization roller 7 and a toner is fixed to it, it is guided to separation and the outlet guide plates 12 and 13 from a roller with the curvature of a roller, and the rigidity of imprint material -- having -- a Laura Deguchi pair -- it is taken out by 14 outside the plane.

Usually, although separation conveyance of the imprint material 15 is carried out by the curvature of a roller from the pressurization roller 7, when separation by curvature cannot be performed under the effect of the condition of the imprint material 15, or the coating weight of a toner by moisture absorption etc., the tip of the imprint material 15 is mechanically torn off by the separation pawl 8, and is conveyed.

[Patent reference 1] JP,2000-29346,A official report

[Patent reference 2] JP,5-307336,A

## [Description of the Invention]

## [Problem(s) to be Solved by the Invention]

[0003]

Drawing 8 is a fragmentary sectional view explaining the case where the jam was generated in the anchorage device by drawing 7, and jam paper is got blocked in the fixing outlet section. After being conveyed from a fixing roller 6 and seven pairs of pressurization rollers, when imprint material is overdue in the outlet section and it becomes a jam, the imprint material 15 will be got blocked in the shape of an accordion among the outlet guide plates 12 and 13, and the separation pawl 8 will be forced on arrow-head J \*\*.

If the pressurization roller 7 is rotated in the direction of arrow-head K in order to discharge jam paper in this condition, the tip of the separation pawl 8 made to contact superfluously will eat into the periphery elastic side of the pressurization roller 7, and will attach a blemish.

Although the measures which enlarge contact width of face of a separation pawl, and make planar pressure of a contact side small may be taken since the above faults are mitigated, it ate away by the ratio which enlarged width of face of a separation pawl, and it is [ that an amount and the interlocking force are only mitigated and ] and there was fault to which only the part to which the remains of a stripe by the separation pawl etc. expanded width of face becomes remarkable conversely.

Then, in order that the purpose of this invention may solve the above-mentioned trouble, pinching conveyance of the imprint material is carried out with the elastic roller which carries out a pressure welding. And it has a separation pawl for preventing that imprint material coils around an elastic roller. So that a separation pawl contact edge may eat into an elastic roller and may not damage, also when the pressure beyond a setup joins a separation pawl by imprint material plugging by a jam etc. in the direction of a conveyance lower stream of a river Interlocking to the elastic roller of a separation pawl is regulated, and it is in offering the anchorage device of the image recording equipment which prevents with a blemish.

## [Means for Solving the Problem]

[0004]

In order to solve the aforementioned technical problem, in invention according to claim 1 The elastic body of revolution which rotates in the state of a pressure welding mutually, and carries out pinching conveyance of the imprint material in the pressure-welding section, In the anchorage device of image recording equipment equipped with the separation pawl for contacting the peripheral face of this elastic body of revolution, and preventing coiling round to said elastic body of revolution of said imprint material which carries out pinching conveyance Said separation pawl contacts said elastic body of revolution, and is characterized [ main ] by the anchorage device of the image recording equipment which has the auxiliary contact section prepared along the cross direction of said elastic body of revolution in the location which separates from said elastic body of revolution by the downstream rather than the claw part which contacts the front face of said elastic body of revolution, and this claw part.

In invention according to claim 2, said auxiliary contact section is characterized [ main ] by the anchorage device of the image recording equipment which has the auxiliary contact side which makes the front face and acute angle of said elastic body of revolution toward the improvement style side in the method of rotation of said elastic body of revolution.

In invention according to claim 3, said auxiliary contact section is characterized [ main ] by the anchorage device of the image recording equipment according to claim 1 or 2 arranged to the both ends of the main contact section in the cross direction of said elastic body of revolution.

In invention according to claim 4, it has the imprint material slideway to which said claw part makes the front face and obtuse angle of said elastic body of revolution, and shows imprint material toward the improvement style side in the method of rotation of said elastic body of revolution, and is characterized [ main ] by the anchorage device of the image recording equipment according to claim 1 or 2 with which said auxiliary contact section is arranged rather than said imprint material slideway at the hand-of-cut downstream of said elastic body of revolution.

## [Effect of the Invention]

[0005]

according to claim 1, imprint material is got blocked by the time of jam generating, or the operation mistake -- wanting to make it -- blemish attachment by the elastic roller according to a separation pawl also for it being can be prevented, and the anchorage device of the image recording equipment which held down repair cost and service cost can be offered.

According to claim 2, by constituting the field of an angle of incidence  $\theta$ , drag force to interlocking of a separation pawl can be enlarged more, and more positive effectiveness can be expected.

The anchorage device of image recording equipment without blemish generating to an elastic roller can be offered without according to claim 3, generating abnormality images, such as a stripe image by the separation pawl, since it usually becomes contact at only the tip of a separation pawl in the state of contact.

According to claim 4, curvature dissociating becomes inadequate according to moisture absorption of toner coating weight or imprint material, and the anchorage device of image recording equipment without blemish generating to the elastic roller by the separation pawl can be offered, without worsening generating of a jam etc. also in a situation which is mechanically torn off with a separation pawl.

[Best Mode of Carrying Out the Invention]

[0006]

Hereafter, a drawing explains the gestalt of operation of this invention to a detail. Drawing 1 is the outline sectional view in which considering as the example which carries out pinching conveyance of the record material (imprint material) with the elastic roller which carries out a pressure welding, and showing the anchorage device in image formation equipments, such as a copying machine.

Drawing 2 is the partial enlarged drawing of the anchorage device of drawing 1. Drawing 3 is the perspective view showing the separation pawl of the anchorage device of drawing 1.

In addition, in explanation of this operation gestalt, the same sign is given to the same part as the example of a configuration shown in drawing 7 and drawing 8, and explanation of the duplicate configuration and actuation is omitted.

In drawing 1 thru/or drawing 3, the separation pawl 1 is attached free [ rotation ] focusing on the rotation supporting point G through the bracket 4 fixed to stay 3.

Furthermore, it was pressurized in the pressurization roller (elastic body of revolution) 7 direction with the spring 5, and tip (claw part) 1a of the separation pawl 1 is in contact with the surface of the pressurization roller 7. The fixing roller (elastic body of revolution) 6 which contained the heat source was made from foaming silicon, and only the surface has secured smooth nature and a mold-release characteristic by hard silicone rubber.

Projection (auxiliary contact section) 2 and 2' are prepared in the direction which intersects perpendicularly with the conveyance direction in the both-sides side of tip 1a of the separation pawl 1, respectively, and Opening A is established in the point of projection 2 and 2' to tip 1a of the separation pawl 1 being in contact with the pressurization roller 7.

[0007]

Since a projection also contacts the pressurization roller 7 with the tip of the separation pawl 1 by preparing projection (auxiliary contact section) 2 and 2', it is prevented that the blemish of the pressurization roller (elastic body of revolution) 7 by subduction of tip (claw part) 1a of the separation pawl 1 becomes deep.

Since projection (auxiliary contact section) 2 and 2' do not always contact the pressurization roller (elastic body of revolution) 7, it can prevent that a blemish spreads crosswise [ of the pressurization roller (elastic body of revolution) 7 ].

It has the front face of the pressurization roller (elastic body of revolution) 7, and the auxiliary contact side which makes an acute angle ( $\theta$ ), and the turning effort of the pressurization roller (elastic body of revolution) 7 can be changed into the force which has been over about the separation pawl 1 by this. If it is the purpose which prevents that a blemish spreads crosswise [ of the pressurization roller (elastic body of revolution) 7 ] like \*\*\*\*, the front face of the pressurization roller (elastic body of revolution) 7, a perpendicular ( $\theta = 90$ ), or parallel ( $\theta = 0$ ) is sufficient as auxiliary contact side 2a.

Since the force is added in the direction of arrow-head B which is the pressurization roller 7 contact direction and the pressurization roller 7 is rotating in the direction of arrow-head F when the imprint material 15 is got blocked with the case where a jam is generated etc. in the outlet section in the shape of an accordion, tip 1a of the sharp separation pawl 1 becomes the behavior which eats into the SHIRIKOGOMU layer of the peripheral face of the pressurization roller 7.

On the other hand, projection 2 and 2' prevent that projection 2 and 2' become the resistance to migration in the direction of arrow-head B for Opening A, and the tip of the separation pawl 1 eats into the silicone rubber layer of the pressurization roller 7, when the pressurization roller 7 rotates in the direction of arrow-head F.

[0008]

Drawing 4 is the partial enlarged drawing of the anchorage device of drawing 1 explaining the field in which the angle of incidence theta was formed to the direction of a tip contact section normal of a pressurization roller and a separation pawl. Drawing 5 is the partial enlarged drawing of the anchorage device of drawing 1 explaining plugging of the imprint material of the fixing outlet section. Drawing 6 is the outline perspective view showing the separation pawl of drawing 5.

Field 2a which attached the angle of incidence theta to the pressurization roller 7 and the direction of a separation pawl 1 tip contact section normal is prepared at the projection 2 of the separation pawl 1, and the tip of 2'. Moreover, at the time of usual contact in case the separation pawl 1 does not receive external force, a height 2 and 2' form the very small gap delta ( drawing 4 ) between the peripheral faces of the pressurization roller 7.

Tip (claw part) 1a to which the separation pawl 1 contacts the front face of the pressurization roller (elastic body of revolution) 7, The elastic body of revolution 7 is contacted by the downstream rather than tip (claw part) 1a in the hand of cut of the elastic body of revolution 7. It has the projection (auxiliary contact member) 2 and 2' which it had along the cross direction of the elastic body of revolution 7, and this auxiliary contact member 2 and 2' have the front face of the elastic body of revolution 7, and the auxiliary contact side which makes an acute angle (theta) toward the improvement style side in the method of rotation of the elastic body of revolution 7.

[0009]

If the force to the direction (the direction of a pressure welding) of arrow-head B is received in the separation pawl 1 when getting the imprint material 15 blocked in the fixing outlet section in drawing 5, the tip of the separation pawl 1 will come to eat into the peripheral face silicone rubber layer of the pressurization roller 7. If it sinks by the very small gap delta of a height 2, and a 2' and the peripheral face of the pressurization roller 7, the field in which the angle of incidence theta was formed will contact the peripheral face of the pressurization roller 7.

The pressurization roller 7 does not generate the blemish by separation pawl 1 tip in order to prevent that the buoyancy of the direction of arrow-head D works in projection 2 and the direction of 2', and the tip of the separation pawl 1 sinks more than it since it is rotating in the direction of arrow-head F.

In addition, although an angle of incidence theta demonstrates effectiveness in 0 degree - 90 degrees, from the result of an experiment, its 30-degree order was effective.

Usually, although separation conveyance of the imprint material 15 is carried out by the curvature of a pressurization roller from the pressurization roller 7, when separation by curvature cannot be performed under the effect of the condition of the imprint material 15, or the coating weight of a toner by moisture absorption etc., the tip of the imprint material 15 is mechanically torn off by the separation pawl 1, and is conveyed.

Projection (auxiliary contact section) 2 and 2' are arranged to the both ends of the separation pawl (the main contact section) 1 in the cross direction of the pressurization roller (elastic body of revolution) 7. It has the imprint material slideway E to which claw part 1a makes the front face and obtuse angle of the elastic body of revolution 7, and shows imprint material toward the improvement style side in the method of rotation of the pressurization roller (elastic body of revolution) 7, and said auxiliary contact section 2 and 2' are arranged from said imprint material slideway E at the hand-of-cut downstream of said elastic body of revolution 7.

[0010]

With such a configuration, the tip of the imprint material 15 is conveyed along the top face E of the separation pawl 1. For this reason, if projection 2 and 2' have projected from the Eth page, there is a possibility that the tip of the imprint material 15 may be caught in projection 2 and 2'. However, it can convey, without delaying the imprint material 15, since projection 2 and 2' are retracted from the Eth page ( drawing 4 , lambda).

The auxiliary contact section (projection) 2 and 2' are preferably arranged to the both ends of the main contact section (separation pawl) 1 in the cross direction of the pressurization roller (elastic body of revolution) 7. However, even if the main contact section (separation pawl) 1 is arranged in the cross direction of the pressurization roller (elastic body of revolution) 7 to the both ends of the auxiliary contact section (projection) 2 and 2', the main contact section (separation pawl) 1 is able to be arranged by turns in the cross direction of the pressurization roller (elastic body of revolution) 7.

[Availability on industry]

[0011]

The anchorage device of the image recording equipment equipped with the separation pawl of other operation gestalten as availability of this invention is mentioned.

[Brief Description of the Drawings]

[0012]

[Drawing 1] The outline sectional view in which considering as the example which carries out pinching conveyance of the record material (imprint material) with the elastic roller which carries out a pressure welding, and showing the anchorage device in image formation equipments, such as a copying machine.

[Drawing 2] The partial enlarged drawing of the anchorage device of drawing 1 .

[Drawing 3] The perspective view showing the separation pawl of the anchorage device of drawing 1 .

[Drawing 4] The partial enlarged drawing of the anchorage device of drawing 1 explaining the field in which the angle of incidence theta was formed to the direction of a tip contact section normal of a pressurization roller and a separation pawl.

[Drawing 5] The partial enlarged drawing of the anchorage device of drawing 1 explaining plugging of the imprint material of the fixing outlet section.

[Drawing 6] The outline perspective view showing the separation pawl of drawing 5 .

[Drawing 7] The fragmentary sectional view which considers as the example which carries out pinching conveyance of the imprint material with the elastic roller which carries out a pressure welding, and explains the conventional anchorage device in image recording equipments, such as a copying machine.

[Drawing 8] The fragmentary sectional view explaining the case where the jam was generated in the anchorage device by drawing 7 , and jam paper is got blocked in the fixing outlet section.

[Description of Notations]

[0013]

1 Separation Pawl (the Main Contact Section)

1a Claw part (tip of a separation pawl)

2 Projection (Auxiliary Contact Section)

2a Auxiliary contact side

6 Fixing Roller (Elastic Body of Revolution)

7 Elastic Body of Revolution (Pressurization Roller)

E Imprint material slideway

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[Translation done.]